IN A BISHOP'S VINEYARD.

THE RIGHT REV. B. J. M'QUAID'S SUCCESSFUL ENTERPRISE.

Taking to Farming as a Recreation, He Was Induced to Cultivate Grapes—The Results of Ten Year's Experience in a Delightful Locality—Excellent Wines from Several Varieties of Grapes—Proper Cultivation of the Vines and Care of the Juice—Cleanliness and Attention Have Accomplished Wonders on a Hillside.

The Right Reverend B. J. McQuaid, Bishop of Rochester, besides being an eminent and energetic pillar of his Church, is an extensive and successful farmer, an experienced vineyardist, and an expert wine maker. He took to farming for health and rest, and to escape travelling and being found at public and fashionable watering places, and the luxuriance of the vines and fineness of the grapes grown on his farm led him further into grape growing and then into wine making, and the excellence of his home-made wines induced him to extend his efforts in that direction. He had two objects in view, namely, to get an absolutely pure wine for use in the mass, and, by the sale of the wine, to create a revenue to help support the pet scheme of his life—the

THE BISHOP'S RESIDENCE.

theological seminary now in course of construction at Rochester. For use in the mass, wine must consist of the pure and unadulterated juice of the grape, and no wine to which water, sugar, or other ingredients have been added is allowable. To obtain such a wine is a difficult matter, for most manufacturers are more prone to cater to the palate than the conscience. The title to the Bishop's farm has been since it began to pay held in the name of the Rochester Seminary, and all moneys received from the sale of wine or other products of the farm are paid to the treasurer of the seminary.

The Bishop's farm is at Hemlock Lake, in Livingston county, and about forty miles from

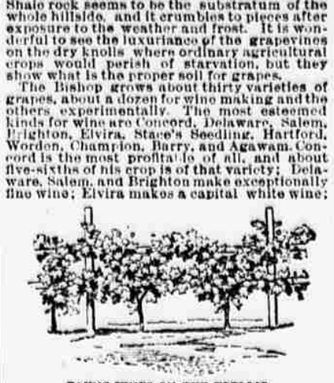
THE WINE CELLARS AND GRAPE HOUSE.

Rochester. From South Livonia station, on the Erie Railroad, a country road extends to the farm over Marrowback hill about four miles, for the farm is on its opposite or eastern slope, and reaches down to the lake, with a frontage of about 3,000 feet on the water. About twenty years ago, when the Bishop was on a visit to the parish priest at Hemlock Lake village—then called Slab City because of the sawmill industry centred there—on the Ontario county side of the lake, he first saw and admired the wild, wierd hillside of the opposite shore, wooded, steep, and rocky, and without a human habitation, and he yearned for such a place for a summer home where he might rest, retired from the life of the world, and recuperate his strength, for he was in failing health. Straightway he purchased more than a hundred acres of land there, and so delighted has he been ever since with his retreat that he has added to its extent, till now he owns 215 acres. While the summer residents have built their cottages by the edge of the lake, and the farmers' homes adjoin the public roads that run along near the top of the hill, 700 feet above the lake, the Bishop has built his residence and farm buildings away from everybody, on the steep slope, and 300 feet above the water. The house contains seven large rooms and a chapel, also a very wide hall. All cooking is done in another house back of this one. Between the house and the water except a small patch of vineyard in front, all is wild woodland. With very little felling of trees beautiful vistas could be opened up across the lake, but the Bishop loves the old trees and the retirement they insure him. The trees are chestnut, basswood, ash, oaks, especially the chestnut oak, white pine, hemlock, and the like. The farm lands and vineyards run to the right and left of the buildings and up the hillside to the public road. The Bishop does considerable farming, keeps a flock of sheep, and several cows, and cultivates grain, hay, and root crops. But the farm is run primarily for the benefit of the vineyards, the main object being to make manure for the vines. Next year, however, when the new seminary at Rochester will be in running order, farming as a business is to be pushed more energetically, for the Bishop hopes to be able to supply the seminary with considerable butter, potatoes, mutton, and other farm produce.

THE FIRST VINES.

After building a house on his farm the Bishop began planting fruit trees, grape vines, and other crops to make home comfortable and enjoyable, and gratify a taste for gardening that he has always had. When his grapes began to bear, in greater quantity than he could consume on the farm and at his house in Rochester as table fruit, he made a little wine of the surplus, and he soon found out that he could make good wine, and that, together with the demand for absolutely pure wine, and the suitability of his farm for grapes, induced him to go into grape growing and wine making in earnest. He studied the subject from books and by practice and observation, and extended his vineyards, built wine cellars, and employed an experienced vineyardist from the Bordeaux district in France, and an expert wine maker or cellar man as he is also called, likewise a Frenchman. But now as everything in the matter of cultivation and wine making on the place is so thoroughly timed, perfected, and understood, only one of the Frenchmen is retained, but he has several assistants, and under his active management the business is conducted. At first the vintage was 2,000 gallons, and it has increased steadily since then, except in 1889, when, on account of a short fruit crop, caused by adverse climatic conditions, it amounted to only 900 gallons. Last year it was 8,000 gallons. All appearances this year indicate a far greater increase, and it is expected that 12,000 gallons will be made. On account of an increased acreage in vineyard, more extensive cellar convenience, and improved mechanical appliances, it is hoped that the annual output will be as much as 20,000 gallons in two or three years. The soil is clayey, much mixed with disintegrated shale rock, and it contains a little iron—a necessary ingredient for grapes for good red wines. Shale rock seems to be the substratum of the whole hillside, and it crumbles to pieces after exposure to the weather and frost. It is wonderful to see the luxuriance of the grapevines on the dry knolls where ordinary agricultural crops would perish of starvation, but they show what is the proper soil for grapes.

The Bishop grows about thirty varieties of grapes, about a dozen for wine making and the others experimentally. The most esteemed kinds for wine are Concord, Delaware, Salem, Brighton, Elvira, Stace's Seedling, Hartford, Worden, Champion, Barry, and Agawam. Concord is the most profitable of all, and about five-sixths of his crop is of that variety; Delaware, Salem, and Brighton make exceptionally fine wine; Elvira makes a capital white wine;



YOUNG VINES ON THE TRELLIS.

indeed, it is from this variety that the best champagne is made; Hartford and Champion, although not much favored as table grapes, make excellent wine, and one peculiarity of the Hartford is that it does not drop its berries there as soon as they are ripe, as it does in most other places, even at Rochester. Worden ripens so early and thoroughly and is so sugary that it makes a fine red wine. Barry and Agawam, too, are good, but the former is hardly so good there as it is about Rochester. Stace's Seedling is comparatively unknown. It originated with a fruit grower named Stace, at Charlotte, near Rochester, and is an excellent wine grape, but not desirable for table use. It is also remarkable for its cleanness and healthfulness. So far the Niagara has not been a success with the Bishop, and the wine made from it has not been satisfactory. It is planted largely in the neighborhood, however. Some of the regular wine grapes, Clinton, for instance, have been disappointing. About 400 Catawbas are planted, and when they ripen well make a fine wine, but they do not ripen always. The same fault is found with the Iona, also an excellent wine grape.

CULTIVATION.

The Bishop does not propagate his own vines; he can buy them cheaper from the nurserymen than he can raise them, and get just as good, if not better, stock, for it is a business with them, and they have soils and conveniences for the purpose. He prefers two-year-old plants for setting out, but sometimes he uses extra quality one-year-olds with capital success. He plants in the spring in preference to fall. In the fall, when it is time to plant, every one is busy gathering and storing grapes and wine making, and there is no time to plant properly; besides, fall-set plants are likely to be heaved out of the ground by frost in winter, and may want replanting again in spring. In the earlier plantations he used to let the vines branch from the ground, making three or four stems, but nowadays he is very particular that the vines shall be one-stemmed only until they reach the first wire. That is for convenience in cultivation. A horse hoe is used in the vineyards. In the case of one-stemmed plants the machine will hoe right up to the stems, leaving very little to do for the hand hoe that comes after it, and in the case of several-stemmed vines two or three times as much work is left for the hand hoe, which is a waste of labor, therefore a waste of money; and a one-stemmed plant is just as good as a many-stemmed one.

The rows of vines are planted across the hillsides and not up and down them as we sometimes see, and they are eight feet apart. The furrows between the rows keep the rain from rushing down the hillside. That gives plenty of room for cultivating the ground and for driving a wagon between the rows. Vigorous vines, like the Concord, are planted eight feet apart in the rows, but slender ones, like the Delaware, only six feet apart. The supports to which the vines are trained are three-wired trellises, made of chestnut posts and three strands of No. 9 cold grape wire. The end posts are stout, the inner ones about the size of stout split rails, and, as they stand in the rows, are about five and a half feet above ground. The posts are cut in winter, from the chestnut trees growing on the place, into lengths of about eight feet and split to proper size; then they are pointed with an axe, and stacked for a year or more to season. Green wood is never used for posts, for the most durable timber—yellow locust, red cedar, or chestnut—if driven into the ground green and with the bark on will soon rot, whereas the same wood peeled and thoroughly seasoned will continue sound for many years. Where the ground is moderately level or even the posts are set twenty-five feet apart in the row, but where the hills are mellower and steep and deep, the posts have to be set closer to admit of the wires being tightened evenly and at an equal distance from the ground. The posts are driven into the ground by a heavy mallet, and, of course, are never driven deep enough to be beyond the power of the frost to heave them in winter, so they are always heaved more or less. But little notice is taken of that, for the trouble is mended easily. In early spring, when the frost has left the ground, before the vine buds swell, a couple of men, with horse and cart, go along between the rows and right the posts; one man straightens the posts, and the other man, standing in the cart, hits the post on his right hand side a sharp blow or two with a mallet, then turns around and does the same to the post on his left hand side, firming them perfectly. The first wire is about twenty inches above ground, the second wire about eighteen inches above that, and the third, or top, wire about eighteen inches above the middle, or second, one. They are retightened every spring, and it is to prevent straining the posts in tightening the wires that an extra heavy post is used at each end of the rows.

TRAINING THE VINES.

The vines consist of one upright stem and four branches, two inclined to each side. The two lower branches are trained horizontally to the lower vine, and the two upper shoots are tied diagonally to the middle or second wire. The shoot tied to the top wire, over it is reserved for the young growth. The tying is done with slender willow withes, which hold good all summer. In June, when the vines have started into vigorous growth, the young shoots have to be tied to the wires, else they are likely to be broken, disheveled, and in the way. The workmen spread out the shoots horizontally on the two lower wires and diagonally upward to the top wire, and fasten them in place with a few straws of green rye. It is no matter if the straws become brittle and break soon, because after a few weeks the tendrils of the young growths catch on to the wires and hold the vines in place independent of any artificial fastenings. Green rushes (*Juncus*) are also used for the summer tying, and, when they can be had in plenty, are liked better than the green rye straw. About the middle or end of July some of the young shoots will have grown out beyond bounds, and must be tied in or shortened. In shortening them care is taken not to break or cut off more than one-fourth to one-third of the cane, just enough to cause it to stiffen its leaves and firm its wood without unduly exciting its buds to break into laterals.

Abundant foliage is of primary importance to the grape. The shade afforded by it is very beneficial to the fruit, and it is a fact in vegetable physiology that healthful foliage is an indication of healthful roots, and in order to have roots one must feed to the full the wants of the European countries. Unfortunately, however, the desire for money makes many of our wine makers adulterate their wines, and the adulteration is done to an alarming extent. Some dealers buy up the cheap wines and fix them up to suit the American taste with water, brandy, sugar, and other things. In some books on wine making, how to adulterate wines is one of the leading subjects. In France and Germany the use of salicylic acid in wines for home consumption is forbidden by law, but for export purposes there is no in-

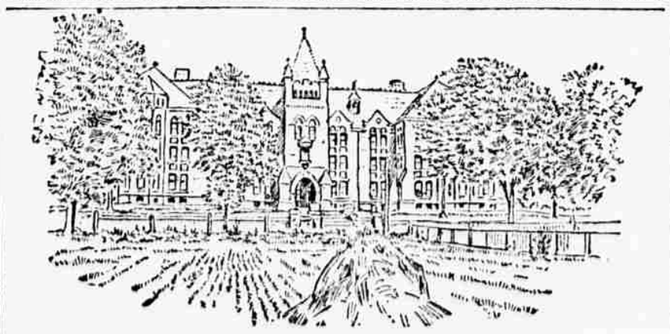
THE EDGE OF THE VINEYARD.

ground. The entrance to the upper story is at the up-hill end and above ground, and the entrance to the lower story is at the down-hill end, and because of the hill slope it also is above ground. But the third, or last-built cellar, is his model of perfection. In building it he had the fruits of experience to guide him, and he is highly pleased with the result. It is in a deep, narrow ravine, or water shed, between high, steep banks, filling up the gulch, and at the same time leaving ample room for the water to run underneath it. Looking at it from the gable it is six stories high, but five of the stories are under ground, as seen from the sides, and two above ground. The height from foundation to ridge pole is seventy feet, the length sixty feet, the extreme width twenty-six feet, but as the walls are three feet thick, the inside width is only twenty feet. The lower stories are of stone quarried on the place, and are ventilated by windows at both gable ends; the windows are double, that is, one is fixed flush with the outside of the wall, and the other in the middle, or eighteen inches from the outside one, and flush with the inside of the wall are wooden shutters; thus, when all are shut, leaving two dead-air chambers each eighteen inches wide, impervious to heat, frost, or change of temperature. The floors are double oak plank with a top facing of pine boards, and are supported on steel beams set four feet apart. The oak planks and most of the heavy timber used in construction in the buildings were cut on the place, where a portable saw mill had been used for some time. The floors of the new building slope to the middle, where there is a narrow groove or drain, and that slopes to the down hill gable end, thus insuring perfect drainage on every floor, a very necessary condition, considering the amount of washing and cleaning that has to be done and the importance of keeping everything clean and the atmosphere sweet. A steam engine in a house adjoining the cellar is useful in many ways. The steam is used for cleansing the casks, for heating the caldrons containing the pomace, and for furnishing motive power for several purposes.

The cellars are ventilated early in the morning in warm weather, at noon in winter, and at other times according to the state of the weather, for it is highly important that an equable temperature be maintained. But the Bishop is dissatisfied with that arrangement because in November and December particular, when fermentation is most active, it is very important that a temperature of about 60° be maintained, and without some artificial means of heating the building that evenness cannot be secured readily, nor can the building be ventilated properly in winter. He has resolved to put in hot water pipes to heat the whole building this year. Wines that are fermenting require an even temperature of 60°, but wines that have ceased to ferment and are bunged up or bottled and stored away to keep do better in a temperature of 45°.

PICKING AND PRESSING.

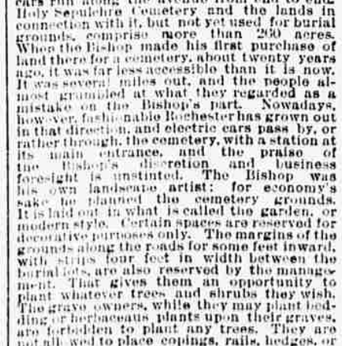
As wine grapes should be thoroughly ripe before they are expressed, it is desirable to leave them on the vines as long as that can be done with safety from dropping, disease, or frost. Well ripened grapes, free from rotting and disease affect them so little that they receive no consideration; the only care is to get them in before a sharp frost strikes them. The picking is done by women and girls. Some come from the neighborhood and go home at night, and others come from the Italian quarter here to the place in a very nice cottage by themselves, and they board themselves. They work eight hours a day, from 8 A. M. till 5 P. M., with an hour at noon for luncheon, and are paid by the day, and they are at perfect liberty to eat all the grapes they wish to.



ST. BARNARD'S NEW SEMINARY.

When the grapes are gathered they are hauled in wagons to the press rooms that are in the upper stories of the wine cellar, and stored there two to four weeks in skeleton trays to become still further ripened, for one of the main points in wine making is to have the grapes as ripe as possible. The grapes are not pressed as soon as gathered. The drying trays are four feet square and six inches deep, with open lath bottoms. Hemlock fence boarding is used for the four sides and common house laths for the bottoms. Apertures a lath wide are left between the laths, and there are cross laths six inches apart to support the others. The trays, when nearly filled with grapes, are stored, one above the other, seven or eight high, with two and a half inch blocks between them at their four corners, to leave a good opening for the passage of air. The tiers of trays, a few inches apart, are arranged in rows across the building with narrow passageways between them, and full ventilation is turned on. A good deal of moisture is in that way evaporated, and instead of getting a gallon of wine from twelve pounds, as would be the case with fresh picked grapes, fourteen to fourteen pounds are frequently necessary to the gallon. The stems of the clusters and grape stalks also shrivel a little and lose their bitterness, all of which adds to the quality of the wine.

When the fruit is ripe for pressing it is passed through an American wine press, which the Bishop and his winemaker consider much superior to any of the European presses. The pulp is then put into a large vat, where it is allowed to drain for a day or two. From the draining wines of the finest quality are obtained. The pomace is squeezed dry by means of the old primitive screw of the European countries. Unfortunately, however, the desire for money makes many of our wine makers adulterate their wines, and the adulteration is done to an alarming extent. Some dealers buy up the cheap wines and fix them up to suit the American taste with water, brandy, sugar, and other things. In some books on wine making, how to adulterate wines is one of the leading subjects. In France and Germany the use of salicylic acid in wines for home consumption is forbidden by law, but for export purposes there is no in-



A LANDING PLACE.

From the lake the city of Rochester gets its water supply. It is 388 feet higher than the city. About 130 cottages, occupied in summer but unoccupied in winter, dot its edges wherever a space wide enough can be had to build a cottage on. They are mostly on the Ontario county side, because a narrow wagon road runs along the bank of the hill there for the full length of the lake. Most of the cottages are built near the water's edge and between it and the road. The forest trees afford shade and shelter, and, in the absence of kerosene stoves, fuel also. As there is no roadway near the water on the Livingston county side, nor possibility of making one, fewer cottages are on that side. The only way of getting to them is by boat, but every cottage has one or more, and a public steamboat plies on the water. There are no fogs on the lake. At the northern end of the lake is a hotel, and a stage runs between it and the Livonia railroad station, several miles distant. By election of the cottagers on both sides no license is granted for the sale of liquors. That brings to the neighborhood quiet, respectable people only, who come for health, rest, and the delightful recreations of boating and fishing. It is a retreat for editors and clergymen as well as business men. Among the residents are eight clergymen, including the Rev. George Ward of the Presbyterian Church at Dansville, N. Y., and the Rev. Mr. Hayes of M. E. Church, Rochester; Mr. A. O. Bunnell of the Dansville *Advertiser* and Mr. J. O'Connor of the Rochester *Post-Express* find a summer resting place there, and one of the handsomest cottages on the lake belongs to Tom Karl, the tenor singer. Black bass, rock bass, perch, pickerel, and lake trout are caught there. Fish poaching by means of seines and set lines, and spearing the fish in their spawning grounds, a little while ago, hurt the fishing considerably, but a recent act of the Legislature and a determined stand taken by the cottagers to enforce the law have put a stop to the illegal practices. Hemlock Lake was the favorite fishing ground of Mr. Seth Green, the fish culturist.

A noteworthy point in connection with the cottages by the lake is the rigid sanitary arrangements enforced by the city of Rochester to prevent the water becoming contaminated in any way by drainage or other impurities. Drains are not allowed to run into the lake, and outhouses cannot be erected close to its edges. It is the duty of the city's superintendent of water works, who is resident at the lake, to enforce this rule, to provide every cottage with an ample sheet-iron vessel to hold the deleterious matter, and to send a scow around to every cottage two or three times a week to collect the vessels with their contents, leaving empty clean ones in their place. The scow brings the full vessels to a dock at the north end of the lake, where they are lifted on to a small railroad track, on which they are sent out some distance to a dumping place prepared for the purpose in the country.

SEMINARY AND CEMETERY.

The Theological Seminary, the pride of the Bishop's heart, is a spacious, substantial, and magnificent brown-stone structure on Lake View avenue, one and a fourth miles beyond the city limits, and three miles and a half from St. Patrick's Cathedral, beside which is the

BRAVO.

Bishop's house. It is now in course of construction and being pushed rapidly toward completion. It is to have accommodation for sixty-two students, each of whom will have a room to himself; also professors' and class rooms. The chapel, dining rooms, kitchen, stakery, store rooms, &c., are in a separate building, behind the seminary, but the intention is to connect it with the main buildings.

All of the buildings are fireproof and provided with the most improved modern arrangements of heating, ventilating, and draining. The buildings stand between the avenue and the Genesee River, on high, dry ground, and Seneca Park East runs along the river on the other side. In connection with the seminary are forty acres of land, and adjoining the land, but further on toward Charlotte, is Holy Sepulchre Cemetery and other lands that belong to the Catholic Church. Of the seminary lands a patch of sixteen acres is separated from the rest and some distance away. It is to be cultivated as a fruit and vegetable garden, and the Bishop intends to erect there a set of modern greenhouses for the forcing and cultivation of vegetables in winter, for the use of the seminary.

Lake View avenue and Edgewood avenue, one of Rochester's most fashionable streets, runs between the city and Lake Ontario, past the Catholic Seminary and through Holy Sepulchre Cemetery, and electric cars run along the avenue from end to end. Holy Sepulchre Cemetery and the lands in connection with it, but not yet used for burial grounds, comprise more than 200 acres. When the Bishop made his first purchase of land there for a cemetery, about twenty years ago, it was far less accessible than it is now. It was several miles out, and the people almost grumbled at what they regarded as a mistake on the Bishop's part. Nowadays, however, fashionable Rochester has grown out in that direction, and electric cars pass by, or rather through, the cemetery, with a station at its main entrance, and the praise of the Bishop's discretion and business foresight is unstinted. The Bishop was his own landscape artist: for economy's sake he planned the cemetery grounds. It is laid out in what is called the garden, or modern style. Certain spaces may plant bedding-out evergreens purposes only. The margins of the grounds along the roads for some feet inward, with strips four feet in width between the burial lots, are also reserved by the management. That gives them an opportunity to plant whatever trees and shrubs they wish. The grave owners, while they may plant bedding or herbaceous plants upon their graves, are forbidden to plant any trees. They are not allowed to place copings, rails, hedges, or the like around their lots, as is done so often in old cemeteries.

The soil of Rochester is peculiarly adapted for the growth of trees, and the cemetery is particularly rich in arboreal variety. Near the entrance gate is a plot containing seventeen kinds of elms in beautiful health. They consist of a handsome specimen of the Siberian elm, some fine Camperdown elms, and a few forms of the Scotch, English, and American elms. Pines, junipers, and spruces do remarkably well, and costly sheltered by other trees is a good specimen of the Lawson

AVENUE OF LOMBARDY POPLARS.

cypress (*Chamaecyparis Lawsoniana*), whose hardiness so far north is something remarkable. The European larch is planted largely and is very beautiful, and here are many yellow woods, birches, and other ornamental trees. Dense shelter belts have been made in the newer parts to break the fierce winds and snowdrifts in winter, and in them Austrian pines face the wind. Then come Norway spruces and white pines, pretty close together. An avenue of Lombardy poplars, half a mile in length and straight as an arrow, is an imposing sight. The poplars are in fine health, well branched and leaved, twenty-five to thirty feet high, and eighteen feet apart. Between them and behind them young Norway spruces are growing to serve as a wind break.

SUGAR FROM BEETS.

The Growth of the Beet Industry in Europe—How the Roots are Cared For—Possibilities of the Crop in this Country.

For the past ten years the agricultural outlook in our country has been a gloomy one. Farming has not been remunerative. In the older States farms have been abandoned, excepting near large towns, where small fruits and vegetables can be grown at a profit. In the newly settled States, where manures are not applied to any great extent, the profits are larger; but there the closest economy must be observed or the farmer cannot meet his expenses and maintain his home. There are on Long Island very many farms, in fact the majority of them, where the farmer's gross receipts are not as much as the better class of skilled workmen receive from their year's labor. Consequently our farmers are looking for some industry more profitable than the growing of cereals, fruits, vegetables, or the raising of stock.

Among others the sugar beet industry has has been discussed and earnestly advocated because it is more profitable in France and Germany than any other branch of agriculture. Its advocates say, if remunerative in other countries, why cannot it be made so in this? That the industry is a profitable one when established does not admit of a question, because it would not be pursued if it were not. But it does not follow that because Germany has made a success in the manufacture of beet sugar that we can. If it were a question of intelligence or industry it would settle itself, and the only consideration would be, will it pay? But there are climatic conditions, as well as those of soil, that must be considered, quite as much as our necessities and enterprise.

In order better to understand the situation let us review the industry as carried on in France and Germany, and state some very important facts connected with the same that are not generally understood, facts that were obtained on the farms, factories, and seed houses in the countries above mentioned. It is to be regretted that many of the statements commonly made regarding this industry are superficial, and do not clearly state the case; in fact, are misleading, not from any disposition to misrepresent, but because they are not understood. It requires far more than a casual view of the farms on which the beets are grown, or a visit to the vast factories where they are converted into sugar, to know anything about the industry. There are certain scientific principles involved that must be clearly understood, as well as the cost of the knowledge required, before the slightest idea can be formed as to the practicability of its introduction in this country. In order to be better understood, let us take a hasty glance at the history of sugar making from beets.

As early as the year 1747 the German chemist Margraf demonstrated the existence of cane sugar in the beet root, but it was not till 1800 that its manufacture was commenced as an industry in France and Germany. Since then it has rapidly increased in importance, but not without vast expenditure of money, which was largely contributed by the governments in the way of bounties. Like all other industries, at the start there was but little to encourage and so much to dishearten the capitalist, and, had it not been for the encouragement the governments afforded, the enterprise would have been a decided failure, because it cost more to establish the plant, in all its detail, than individual enterprise would put into the venture, as will be made sufficiently clear as we proceed. As it was, the blockade of the French ports compelled its use or of accepting the alternative of going without sugar. While the latter was the parent of the industry, there was but little produced until the year 1815, when the industry commenced rapid strides, and the production rapidly increased, so that in the year 1875 the yield of beet sugar in France alone was 440,000 tons, valued at $22,000,000.

The beet used for sugar purposes is a selection of the white silesian (*Beta Cicla*), which at the start did not contain nearly so large a percentage of saccharine matter as do the varieties now under cultivation. The improvement in this respect is entirely due to selection, the parent of all improvement in vegetable forms. None but the seedsman and chemist has the slightest appreciation of the labor it has cost to develop in the beet its present high standard of value for the purpose for which it is used and which tends to maintain it. To Henry Vilmorin of Paris and to Dippe Brothers of Quedlinburg, a town in Prussian Saxony, whose establishments I visited, we are indebted for much valuable information in regard to this part of the industry. In either of these establishments may be seen as perfect chemical laboratories as ingenuity can devise. The dimensions of the latter, I should say, without knowing the exact size, were 50x75 feet, and completely fitted with all the appliances for the making of sugar. The plant in part that performs in the production of seed I will state.

It is generally known that all roots, no matter what the class or variety may be, when grown for seed purposes, are grown from seed sown in the spring, and taken up upon the approach of winter, stored in pits, and replanted the following spring, when the most careful selection as to form, size, and color is or should be made. But the sugar beet requires ten times more care in selection than all others combined. The important features in selection, as applied to other root crops, is not of the slightest importance to the latter, and they are never noticed. It matters not whether the roots are yellow, pink, or white, large or small, crooked or straight, the only test of importance being the percentage of saccharine matter the root contains, and this test is crucial, and made in the following manner: In selection for seed purposes there is a small piece gouged out of each root, in size about one-half a cubic inch, which goes through all the operations necessary to make sugar, and every root that does not contain 28 per cent. saccharine matter is rejected. Now, when we consider that it takes 3,000 roots to plant an acre, and that there plants 1,500 annually, an easy estimate can be made of the cost as well as its importance. If the industry is to be established in this country selection must be as systematic as in Europe, and as thorough; and, further, selections must be made in our country for our country, as I will now endeavor to show.

The cultivation of the beet for any purpose in any country is simple enough; its requirements are a deep, strong loam, made very rich, and worked deep and fine, and kept free with frequent surface workings until the crop is secured. In its cultivation for sugar purposes there is a point of vital importance that must not be overlooked, viz., does the soil and climate possess the elements that are essential in the manufacture of sugar? The plant can take from either or both elements they do not contain, consequently when a given element is exhausted by any vegetable production, the vegetable should not again be planted in the same soil until nature, through her own resources, has replaced the desired element. This principle is what has made the rotation of crops an agricultural necessity. Oft-repeated experiment has shown conclusively that beets for sugar cannot be profitably grown on the same field but once in four years, and it is better if they are deferred five years. This is of very much importance that before a manufacturer will buy a given crop he has a systematic test made from roots taken from various parts of the field. This is as much a custom as is the examination of cotton, wool, or grain by experts in the various lines.

It has been asserted by some of our distinguished agriculturists, and used by them as an argument in favor of growing beets for sugar, that this industry would be established, as the beet crop is an important auxiliary to a wheat crop; that the beet, or its culture, puts the soil in the best possible condition for wheat by supplying those elements that the wheat requires, and which have become exhausted by previous crops. Than this there can be no greater mistake, the direct opposite being the result. The soil can be put in condition to produce beet roots of high value only by at least two crops of wheat—three would be better—or some similar crops; those restore to the soil the elements the beet takes out. Active manure will not do for the sugar beet; it makes the roots too large, without a corresponding amount of saccharine matter, the rule being, the smaller the root the better for the purposes for which it is grown. In this there is a conflict between the farmer and the manufacturer, as the roots are sold by weight; the farmer wants size, while the latter wants quality. Hence the necessity of a chemical test to fix the value of a crop.

The next point for our consideration is, are our conditions of soil and climate suited to the cultivation of this crop? This matter the chemist can settle without the expense of a costly plant for the making of sugar. This point being settled, the next considerations are, can it be made a profitable industry, and what are the necessary steps to be taken? It does not follow that the seed grown in Europe will give the same results when grown under very different conditions in many parts of our country. It must be borne in mind that in France and Germany there is not that marked variation in soil and climate that is so peculiar here; our soil is more variable than that of almost any other country. If it were the same for any considerable extent of territory with the same climatic conditions the question of its adaptation to this industry would be a simple one and could be settled by a single trial. These conditions may be found on our Western prairies. The only course to pursue is to try it.

It being settled that beets produced here are sufficiently rich in saccharine matter to make the industry a profitable one, the last consideration, and a very important one, is the selection of stock. Types of the beet must be selected to suit the conditions of our soil and climate. It may be that the seeds grown in Europe will produce as good beets for sugar here as there, but there is a strong probability they will not, in which case the stocks must be developed here in the same manner as they are in France and Germany. It needs no argument to prove that foreign grown seeds of cabbages, onions, and in fact most other vegetables, are by no means as good for our country as those produced here, and why may we not expect the same results with the beets? Again, all our vegetables have been developed from foreign stocks. By careful selection, systematically carried on for many years, the various kinds have adapted themselves to our conditions, and numerous types have been established that are vastly superior to the productions of any other country. The same will hold good with the sugar beet; it must be developed by selection, and for the soil and climate in which it is to grow. If foreign-grown stocks do well, those of our own selection will do better. This can only be determined by experiment, and experiments are valuable in proportion to their thoroughness. Trials merely are of no use. Persistent effort for a number of years alone will determine whether the industry in this country will be a remunerative one or the reverse.

In France and Germany there is considerable revenue derived from beet roots other than that from the sugar. The grated root (sugar cake) and the molasses, both refuse products in sugar manufacture, are important items, the former for feeding cattle, and the latter, when slightly acidulated with sulphuric acid, yields on fermentation from 24 to 30 per cent. of a coarse spirit, which is chiefly used in the adulteration of brandy. As food for cattle the sugar cake is very valuable. It has been asserted that the refuse from the beet a produced on an acre would fatten a bullock and more than double its value.

The statements made to me by those largely interested in this industry, go to show it can only be made profitable where it can be done on a large scale, where the farmers are satisfied with moderate returns for a long season of labor, where there is a vast extent of deep, strong soil, where the climate is not subject to sudden and extreme changes, and where every particle of refuse can be used for feed and distillation. As a factory of moderate size will use daily from 200 to 300 tons, it can readily be seen, when we consider the land can only be used once in four years for this crop, that a considerable extent of territory will be required to supply a factory of moderate size. Besides this, the labor in cultivation and in the delivery of the beets to the factory is fully four times as great as that of a given acreage of cereals of the same value.

C. L. ALLEN.

COL. M'LAUGHLIN THREW THE BULL.

The Famous Wrestler Cross-buttocked the Brute and Sat On Its Head.

SEATTLE, July 25.—Col. J. H. McLaughlin, once the champion collar-and-elbow wrestler of the world, has just come off victor in a struggle for life with a bull. The Colonel enlisted as a private in the Twenty-sixth New York Infantry at the beginning of the civil war, and after a service of four years and four months he came out a Colonel in the Twenty-fourth New York Cavalry. At the end of the war he settled at Detroit, where he acquired his great reputation as a wrestler. Lately he has indulged in none of these athletic contests. Five years since he came to Seattle, and this city is now his home.

A day or two ago he had an opportunity to show that he had not lost his former skill. He was crossing a ten-acre lot, filled with brush, stumps, and fallen timber. He was in the centre of the lot, when he saw a big red bull coming toward him. Supposing the bull to be of a peaceful disposition, Col. McLaughlin walked leisurely along until, warned by an angry bellowing, he turned and saw the bull within ten feet of him. There was no mistaking the animal's intentions, for its head was down, tail erect, and feet pawing the earth. The Colonel knew he was in for a struggle, but before he could move the infuriated beast had him on its horns. The wrestler's presence of mind did not desert him. Quick as a flash he seized the horns, and after the first toss up he found himself on the back of the animal, but still clinging to the horns. An instant later the bull bucked, and McLaughlin was lying in a brush heap ten or fifteen feet away.

The man picked himself up just in time to receive a fresh onslaught. By a dexterous feint he avoided the rush, and with his right hand seized the left horn of the bull, and with his right hand the nose ring. The contest then became one of brute strength against human skill and intelligence combined with unusual force and endurance. For a time the bull seemed to be getting the best of the bout and the battle. The beast would toss his head in the air, hurling the wrestler aloft, and bringing him to earth again with a crash among the bushes and brambles. The athlete held his grip, however, and avoided being thrown under the feet of his adversary.

With his clothes torn from his body, and bleeding from many scratches and bruises, Col. McLaughlin had about made up his mind that the championship belt of the world for collar-and-elbow wrestling, which hangs in his house, must go to the bull, when he thought of an expedient. Without loosening his hold he sprang to one side, placed his hip against the bull's shoulder, and, exerting all his strength, succeeded in cross-buttocking the animal. The bull went down, and his head under, and one horn driven deep into the ground. The man had won the match.

Then he was in the plight of the hunter with the bear by the tail. He could hold the bull, but he did not dare to let go. He sat on the beast's head and waited. Finally he drew his knife, and was opening it with his teeth, to put an end to the bull's life, when some men, who had seen the combat from a distance, came to the rescue and secured the bull. Col. McLaughlin's clothes hung in tatters and he was badly bruised and scratched, but he still held the championship belt.